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OF

PHILADELPHIA.

ANNUAL REPORTS.

1890.

OCT 27 1902

ACADEMY OF NATURAL SCIENCES

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The following annual reports were read and referred to the Publication Committee:—

REPORT OF RECORDING SECRETARY.

The average attendance at the meetings of the Academy during the year ending Nov. 30 has been thirty, a marked improvement on that of preceding years. The meeting of the Sections at stated intervals continues to be productive of good results, as specialists are in this way enabled to attend the meetings at which matters of interest will be presented for their consideration. Verbal communications have been made by Messrs. Leidy, Heilprin, Brinton, Houston, Horn, Meehan, Woolman, Rothrock, Pilsbry, Allen, Dall, Wilson, McCook, Koenig, Ryder, Meyer, Rand, English, Calvert, Sharp, Rex, Thomas, Wingate, Baker, Goldsmith, Morris, U. C. Smith, Willcox, Sudduth, Lyman, Schaeffer, Martindale, Skinner, Foote, Redfield and Bancroft.

Ninty-six pages of the Proceedings for 1889 and three hundred and thirty-six of the volume for 1890 have been issued, the former illustrated by two and the latter by seven plates. The distribution remains the same as last year. The publications of the Conchological and Entomological Sections noted in my last report have been issued regularly during the year.

Forty-two papers have been presented for publication as follows:—H. A. Pilsbry 6, F. C. Baker 4, Angelo Heilprin 4, A. E. Brown 2, J. E. Ives 2, J. B. Ellis and B. M. Everhart 2, Witmer Stone 2, V. Sterki 1, Harrison Allen 1, W. D. Hartman 1, D. S. Jordan 1, Louis Woolman 1, T. D. Rand 1, H. F. Osborn 1, Chas. R. Keyes 1, John Ford 1, Geo. A. Rex 1, Nathan Banks 1, T. Meehan 1, B. Sharp 1, Charles Morris 1, C. Wachsmuth and F. Springer 1, Jos. Leidy 1, John A. Ryder 1, Edw. Bancroft 1, H. C. Chapman and A. P. Brubaker 1. Forty of these have been accepted for publication in the Proceedings, one for the Journal and one has been recommended for publication in a medical journal to be selected by the author.

Twenty-eight members and eight correspondents have been elected. The deaths of fifteen members and two correspondents were announced and resignations of membership by Dr. Edw. Jackson and Emily G. Hunt were accepted.

Mr. Isaac C. Martindale was elected Treasurer September 23rd to supply the vacancy caused by the death of Mr. Wm. C. Henszey which occurred September 7th. Mr. Chas. P. Perot was elected September 30th to fill the vacancy in the Finance Committee caused by the election of Mr. Martindale to the Treasurership.

The first award of the Hayden Memorial Medal was made, on the recommendation of the Committee appointed to report on the subject, to Prof. James Hall as a well merited recognition of the value of his geological work.

A second invitation having been received from the University of Pennsylvania to remove to a position on the University grounds in West Philadelphia, the subject was maturely considered by the Council of the Academy and on its recommendation again declined by the society at a meeting held March 11th.

Apart from the purely scientific operations of the society, the most important event of the year was the beginning of work on the proposed new building. For the details and dates of the work of construction as far as it has advanced reference is made to the report of the Curators.

All of which is respectfully submitted.

EDW. J. NOLAN,

Recording Secretary.

REPORT OF CORRESPONDING SECRETARY.

While the correspondence of the past year has been of the usual routine character it continues to show the steady progress of the Academy in its exchange relations with the scientific societies of the world. Each year adds many exchanges, rendering the library more useful to those who consult it with the view of obtaining a knowledge of what is being published abroad. The study of the natural sciences seems to be increasing, so that in nearly every town, of any size, in the civilized world, societies are established and soon thereafter a publication of their work in serial form begins.

During the year sixty-eight circular letters and sixty-five cards of acknowledgements of the reception of our publications have been received from societies and other bodies. The nearly equal numbers of the two methods of acknowledgement is doubtless due to the fact that the larger portion of our exchange is sent by mail and is promptly acknowledged by card.

Letters accompanying publications number thirty-one and indicate in great part the number received through the International Exchange.

The demand for missing parts of our publications has been less during the past year than formerly, indicating the greater degree of safety in mail transmission. These deficiencies we have in every instance endeavored to supply.

During the year eight correspondents have been elected and notifications sent. Acceptances have been received from nearly all.

Formal notifications of the death of four correspondents have been received.

With this, my fourteenth annual report, my official connection with the Academy in this position ceases. In conclusion I desire to return my thanks for the compliment paid me in the repeated elections which have made my service so long.

Respectfully submitted,

GEORGE H. HORN, M. D.,

Corresponding Secretary.

REPORT OF THE LIBRARIAN.

The Librarian respectfully reports that the number of additions to the library of the Academy during the twelve months ending Nov. 30, 1890 amounts to 4179; composed of 424 volumes, 3651 pamphlets and parts of periodicals and 104 maps, engravings, photographs, etc.

They were received from the following sources:—

Societies, ...	1663	Geological Survey of Canada, .	3
I. V. Williamson Fund, . . .	892	Indian Museum, ...	3
Editors, ...	845	Geological Survey of Minnesota, .	3
Authors, ...	171	Geological Survey of Pennsylvania, .	3
Special Appropriation, . . .	114	U. S. War Department, ...	3
Roberts Le Boutillier, ...	79	Geological Survey of New Jersey, .	3
Wilson Fund, ...	42	Geological Survey of Kentucky, .	2
Geological Survey of Sweden, .	38	H. B. M. Government, ...	2
Thomas Meehan, ...	36	Wm. W. Jefferis, ...	2
Chas. P. Perot, ...	25	Australian Museum, ...	2
Stephen Parrish, ...	23	Geological Survey of Brazil, . .	2
U. S. Department of Agriculture, .	23	Isaac Norris, ...	2
U. S. Department of the Interior, .	23	U. S. Fish Commission, ...	1
Geological Survey of Russia, .	17	Geological Survey of Roumania, .	1

U. S. Department of State, . . .	16	Department of Mines N. S. W., .	1
Reuben Haines, ...	15	W. G. Thompson, ...	1
Kew Gardens, ...	13	Niagara Commission, ...	1
Geological Survey of India, . . .	12	E. Indian Government, ...	1
J. H. Redfield, ...	11	Department of Mines, Nova Scotia,	1
James N. Stone, ...	10	Capt. L. de Saldanha de Gama,	1
British Museum, ...	9	Dr. Jos. Leidy, ...	1
U. S. Treasury Department, . . .	7	Geological Survey of Missouri, .	1
Geological Survey of New South		Geological Survey of Texas, . . .	1
Wales, ...	6	California State Mining Bureau,	1
Prof. Angelo Heilprin, ...	6	Norwegian Government, ...	1
H. A. Pilsbry, ...	6	Jas. M. McDonald, ...	1
Geological Survey of Finland, . .	5	Minister of Agriculture, Toronto,	1
Ministry of Public Works in		Dr. Henry Skinner, ...	1
France, ...	5	Government of Victoria, ...	1
Engineer Department U. S. A., . .	5	Trustees of East Indian Museum,	1
Chas. E. Smith, ...	4	Hon. G. E. Foster, ...	1
C. M. Betts, ...	4	Rev. G. A. Latimer, ...	1
Geological Survey of Portugal, . .	3	J. M. Hartman, ...	1

They are classified as follows :—

Journals, ...	3272	Ichthyology, ...	15
Geology, ...	282	Herpetology, ...	14
Botany, ...	134	Anthropology, ...	10
General Natural History, ...	100	Physical Science, ...	10
Entomology, ...	61	Helminthology, ...	8
Conchology, ...	47	Mammalogy, ...	7
Ornithology, ...	40	Chemistry, ...	3
Anatomy and Physiology, ...	36	Geography, ...	3
Mineralogy, ...	26	Agriculture, ...	2
Encyclopedias, ...	24	Medicine, ...	1
Bibliography, ...	20	Languages, ...	1
Voyages and Travels, ...	17	Miscellaneous, ...	46

The most important additions as heretofore have been obtained from corresponding societies and by means of the I. V. Williamson Library Fund.

The subject catalogues of the departments of the library in most general use, have been completed and the cards arranged alphabetically in the drawers provided for them. The books and pamphlets on Physical Science, Chemistry, Geography, Agriculture and Medicine only remain to be catalogued and the entire work, it is hoped, will be finished early in the spring.

Two hundred and two volumes have been bound since last report.

For the satisfactory progress on the subject catalogue which I am able to report, I am indebted to the efficient assistance of Mr. E. Fronani while to Mr. Wm. J. Fox acknowledgment is due for satisfactory aid in the current work of the year.

The Academy is indebted to Mr. S. Raymond Roberts for a fine crayon portrait, properly framed, of the late Geo. W. Tryon, Jr. whose long continued services to the society richly merit such a memorial.

Respectfully submitted,

EDW. J. NOLAN,

Librarian.

REPORT OF THE CURATORS.

The Curators present the following statement of the Curator-in-Charge as their report for the year 1890:—

The Curator-in-Charge respectfully reports that the collections of the Academy, in so far as their state of preservation is concerned, are in a satisfactory condition, probably more so than at any previous time in the past decade. But if satisfactory in this important respect, they suffer largely and increasingly through lack of room for their proper display. The additions to the Museum, since the occupancy by the Academy of its present building, have been so numerous and so varied that they have far outstripped the possibilities of location, and to-day it is no longer permitted to carry out that system of orderly classification and arrangement which is a necessity with every large museum of natural history. The steady growth of the collections is an encouraging sign of the increased attention that is given to the study of the natural sciences, and it cannot but be a satisfaction to all friends of the Academy, and a matter of just pride to the citizens of Philadelphia, that the institution which was the first one founded in this country for the exclusive purpose of furthering a knowledge of nature, has been able, after an existence of three-quarters of a century, to still claim the first place in the appreciation of students. That it will continue to hold its own, is amply indicated by the numerous benefits which its patrons and friends generously bestow upon it; but whether the Academy will be able to adequately respond to these benefits, will depend largely upon the helping hand which, it is hoped, an appreciative public will extend to it.

The Academy is to-day laboring to increase the capacity of its domicile. The grant of \$50,000 made by the Legislature of the State during the session of 1889, has permitted it to definitely realize ascheme of enlargement, which, when fully carried into ex-

ecution, will supply that need from which the institution at present most suffers. The contemplated new building (of which perspective view, ground-plan and section are appended to this report), will, when completed, cover a surface area of approximately 23,000 square feet. The main structure will be of rectangular form, with a frontage on Nineteenth Street of 150 feet, and on Cherry Street of 130 feet. Four tiers of galleries, each 32 feet in width, will surround an open central hall, to which unbroken illumination will be afforded by an arched glass roof, springing at a height of 80 feet above the floor. A two-story building, measuring 57 by 49 feet, and containing a lecture amphitheatre designed to accommodate 600 persons, will connect the new structure with the edifice now occupied by the Academy. Active work on this "connecting museum" is now in progress, and it is expected that the structure will be ready for occupancy in the beginning of spring. With the prospect of early carrying to completion the main building it has been deemed advisable, even in the absence of the funds needed to fully erect the structure, to begin work on it at once, and the foundation course has now been laid.

The plans, in accordance with which the new Academy building is to be constructed, were reported from the Board of Trustees of the Building Fund and the special Committee on Plans (appointed November 5th) at a meeting of the Academy held on November 26th, 1889, and were definitely approved by the Academy at the following meeting, December 3d. They are drawn by Mr. John H. Windrim, architect, and contemplate an expenditure in construction of \$239,000. The needs of the Academy make it highly important that this amount be secured, and it is sincerely hoped that the desired funds may be provided at as early a day as possible. Delay in the completion of the building must prove seriously hurtful to the institution and to the interests to which it ministers.

The new edifice will constitute one of the architectural features of Philadelphia; and it is not too much to say that it will surpass any other museum building in the country. In evidence of this, attention is called to the engraving (elevation on Nineteenth Street), in which the comparative dimensions of the present and proposed structures are clearly shown.

The routine work in the museum during the past year has been much as in previous years. As heretofore, the Academy has profited largely through the work of volunteer specialists, and is thus

placed under special obligation to those who have generously contributed their time and assistance. To Mr. John H. Redfield, the Conservator of the Herbarium, and to Mr. Thomas Meehan, the Academy is indebted for the greater part of the systematic work that is being done toward the expansion and proper distribution of the botanical collections; similarly, to the officers of the Entomological Section and the American Entomological Society, it is placed under obligation for work done in connection with the department of Entomology.

In the early part of the year the Curator-in-Charge was designated as the head of a scientific expedition to Yucatan and Mexico, having for its special purpose the exploration—geological, zoölogical, and botanical—of much of the still unexplored sections of the Mexican Republic. The party as organized consisted of, besides the Curator-in-Charge, Messrs. J. E. Ives, Witmer Stone, Roberts Le Boutillier, and Frank C. Baker. The greater part of four months was passed in exploration, and a rich harvest of facts and material was secured for the Academy. A special report covering the general results of the expedition is herewith appended. Attention has already been called in previous reports to the value of this form of scientific research, and too much emphasis cannot be laid upon the advisability of endowing a moderate zoögeographical research fund, the interest from which should be annually applied to exploration of the numerous regions which still await investigation. In no better way, it is believed, could the good of science be subserved, and the general interests of the Academy promoted.

As in previous years, the entire collection of alcoholics has been carefully examined and overhauled, and it is a satisfaction to be able to state that but few removals were found to be necessary. The same satisfactory condition characterizes the collection of birds, which has received much attention from Mr. Witmer Stone, Jessup Fund beneficiary. The Conchological department continues to receive the energetic services of Mr. H. A. Pilsbry, its Conservator, and it is encouraging to know that, despite the comparatively small expenditure of money which its maintenance involves, it still retains its position as the first collection of the kind in the world. The number of trays of mounted specimens in this department is now upwards of 61,000. Through the hearty co-operation of the American Conchologists' Association, and the special endeavors of the President of that Association, Mr. John H. Camp-

bell, much new material, intended to illustrate the complete malacological fauna, fossil as well as recent, of the United States, has been received, and the hope is held out that before very long this important series may be fully established.

The department of the Academy which is to-day perhaps most deficient is that of Mammalogy. This department has been in a practically stationary condition for a number of years past; but latterly the generosity of the Zoological Society of Philadelphia, acting under the authority of its able Director, Mr. Arthur Erwin Brown, has permitted a number of important lacunæ to be filled by the contribution of much important material that could be furnished only by an institution of its kind. Through its assistance the Academy has added very largely to the collections of osteology and comparative anatomy, which are now in a fair way to become leading features of the museum.

Among the donations which it has been the pleasure of the Academy to receive during the past year, is the highly valuable collection of fresh-water sponges made by one of its members, Mr. Edward Potts—without doubt the most comprehensive collection of the kind in the world. It comprises specimens of all the species that have heretofore been discovered or described, and is doubly valuable as being presented by the principal expounder in this field of zoölogical inquiry.

The type microscopic slides (several hundred in number), prepared by Mr. Potts in the course of his investigations, are a part of this donation.

In departments of the Academy not previously specified, the work done has been mainly of a general character. It is a pleasure, in this connection, for the Curator-in-Charge to express his obligations to his able assistant, Mr. J. E. Ives, who continues to render valuable service in the general care and management of the museum.

Specimens for study have been loaned during the year to Prof. W. B. Scott, of Princeton; to Dr. G. Baur, of the Clark University, Worcester, and to Mr. Daniel Giraud Elliot, of New York.

With the view of bringing the Academy into closer contact with its friends and patrons, and to more freely illustrate the nature of its work, it has been thought desirable by many to inaugurate a series of evening gatherings or receptions, at which the representatives of different professions and walks of life might meet in social converse. Two such receptions, under the direction of a specially-

appointed Reception Committee, were held in the early part of the year, and one in December, and their success fully testifies to the wisdom of the course suggested, and justifies the continuance of the same in the coming year. No expense is entailed upon the Academy as a body, the subscriptions to the Reception Fund being borne individually by such members of the institution as wish to participate in the meetings.

Respectfully submitted,

JOSEPH LEIDY,

Ch'n Curators.

ANGELO HEILPRIN,

Curator-in-Charge.

REPORT ON THE OPERATIONS OF THE EXPEDITION TO YUCATAN
AND MEXICO.

The Chief of the expedition, organized under the auspices of the Academy, for the exploration of Yucatan and Mexico, presents the following brief *résumé* of the operations which were conducted under his charge. The expedition, consisting of the undersigned, and of Messrs. J. E. Ives, Roberts Le Boutillier, Witmer Stone and Frank C. Baker, sailed from New York on February 15th, arriving at Progreso, Yucatan, on the 22d of the same month. A full month was spent in the exploration of the northern portion of the peninsula, the operations of the party extending to Calcehtok, on the southwest, to Labna, on the south, to Tunkas, on the east, and to the Port of Silam, on the north. The wonderful caves (Calcehtok, Loltun) and ruins (Uxmal, Labna) of the first range of mountains were incidentally visited, and collections of various kinds made at almost all points touched by the expedition; some little dredging was also done off the coast at Progreso. Headquarters were established for ten days in the railroad camp of Col. John W. Glenn, constructing engineer of the railroad connecting Tekantó with Izamal, where the most liberal hospitality was extended to the members of the party, and facilities furnished for the prosecution of their work. To the generosity and courtesy of Colonel and Mrs. Glenn the expedition is largely indebted for the success of its Yucatan explorations.

On the 23rd of March the expedition sailed from Progreso to Vera Cruz, the remainder of the explorations, extending into June, being conducted in major Mexico.

The route of travel embraced the principal sites of (recent) volcanic activity in the Republic, and thus permitted of a close ex-

amination of the physiographical and biological features of some of the most gigantic volcanic summits on the surface of the earth. The four highest mountains of the Republic were ascended by two or more members of the party within the limited period of three weeks, and thus a good opportunity was afforded for testing relative (altitude) values by means of the barometer. The order of the ascents was as follows: The peak of Orizaba, 6th and 7th of April; Popocatepetl, 16th and 17th of the same month; Nevado de Toluca, on the 21st, and Ixtaccihuatl, on the 26th and 27th. The determinations of altitude have been recorded in a paper published in the October issue of the Proceedings of the Academy.

Some little exploration was made of the lake and valley region of the capital city; but the most important work was accomplished along the eastern and southern face of the central plateau, or in the great contour comprised between Jalapa and the volcano of Jorullo, on the Pacific slope. The edge of the plateau was crossed and recrossed at several points, and it was thus possible to fix definitely the structural relations of one of the most remarkable orographic features on the American continent. The quarries of the famous Mexican onyx, lying in the mountain fastnesses southwest of Tehuacan, were visited, and the geological relations of the peculiar marble ascertained. The ten days immediately preceding the departure from Mexico were devoted to a zoölogical reconnoissance of the ocean-front about Vera Cruz, and to the exploration of the outlying coral reefs.

It is not yet possible to recite fully the scientific results of the Academy's expedition, inasmuch as a considerable part of the material and data obtained by it still awaits study and examination. But it is certain that they have fully met the expectations of the principal promoters of the enterprise, even if it cannot be said that the success was equal in all the special departments which the expedition attempted to cover. Among the more important results obtained may now be mentioned:

1. The determination of the geological features of Yucatan.
2. The discovery (at least to science) of the existence of extensive coral reefs in the western waters of the Gulf of Mexico.
3. The determination of the culminating point of the Mexican Republic, which is also the culminating point of the North American Continent.

4. The determination of the principal geological features of the Republic.

Much of the zoölogical and botanical material obtained by the expedition is new either to science or to the Academy's collection, and thus makes most valuable additions to the museum. The elaboration of this material has been confided to special investigators, whose reports (some of them already either printed or in preparation) will appear in the Proceedings of the Academy, and in a final publication dealing with the explorations generally.

The following papers have already been issued by the Academy :

"Birds collected in Yucatan and Southern Mexico." By Witmer Stone.

"Barometric Observations among the High Volcanoes of Mexico, with a Consideration of the Culminating Point of the North American Continent." By Angelo Heilprin.

"The Corals and Coral Reefs of the Western Waters of the Gulf of Mexico." By Angelo Heilprin.

"Echinoderms from the Northern Coast of Yucatan and the Harbor of Vera Cruz." By J. E. Ives.

"The Geology and Paleontology of the Cretaceous Deposits of Mexico." By Angelo Heilprin.

"Notes on a Collection of Shells from Southern Mexico." By Frank C. Baker.

Other papers now in course of preparation will appear during the early part of the year.

Respectfully submitted,

ANGELO HEILPRIN.

REPORT OF THE BIOLOGICAL AND MICROSCOPICAL SECTION.

During the year 1890 this Section has held fifteen meetings.

Dr. Samuel G. Dixon has been elected a member.

Several papers of interest have been read at the joint sessions with the Academy, and interesting verbal communications have been made by Messrs. Sharp, Ryder, Rex, Wingate, Sudduth and others.

The officers elected to serve for the ensuing year are as follows:—

<i>Director</i> , ...	Dr. Benjamin Sharp.
<i>Vice-Director</i> , ...	John C. Wilson.
<i>Recorder</i> , ...	Harold Wingate.

<i>Treasurer,</i>	.	.	.	.	.	Charles P. Perot.
<i>Conservator,</i>	.	.	.	.	.	Dr. George A. Rex.
<i>Corresponding Secretary,</i>	.	.	.	.	.	Dr. Charles Schäffer.

Very respectfully submitted,

HAROLD WINGATE,
Recorder.

REPORT OF THE CONCHOLOGICAL SECTION.

Since the last annual meeting of the Section specimens have been received from forty-three sources, to the number of 1698 trays, a detailed list of which will be found in the record of additions to the museum.

The most important collection received is that made by the expedition from the Academy to Yucatan and Mexico, under the charge of Professor Angelo Heilprin. Marine shells were collected at Progreso, Silam, Campeche, and Vera Cruz—some 325 trays in all. Land shells were collected in Yucatan and Mexico at many localities, to the number of 406 trays, including many species not before in the collection, and a few probably new. A catalogue of the marine forms has been prepared by Mr. Frank C. Baker, my former assistant, for publication in the Proceedings of the Academy. It will be found of great value to students of the West Indian fauna, as many species are for the first time recorded from the mainland. The condition of many of the specimens is not very good, but this does not materially lessen their value to the zoögeographer. The land and fresh-water forms are being studied by the Conservator of the Section, and a catalogue of them will be offered for publication later.

A collection of 203 trays of land and fresh-water shells from California, Idaho and Washington, purchased by the Conchological Section from Henry Hemphill, increases our suites of western species, and adds to the museum many new species and varieties, a part of which have been described by the writer and others.

A collection of shells, including many alcoholic specimens made by Dr. Benjamin Sharp in the Caribbean Islands, adds 94 trays to our suites of West Indian marine shells, and 25 trays of land species. Dr. Sharp has also presented 30 bottles of excellently hardened and preserved alcoholic material collected by him at Naples and Villa Franca.

The Section has acquired by purchase a fine collection of the remarkable fresh-water shells of the African Lake Tanganika. Eighteen species, belonging to thirteen genera, are represented, the number of specimens being over 100.

The Conservator has also obtained, in exchange from Mr. Robert Jelschin, of Patschkan, Silesia, 100 species of rare land and fresh-water shells, nearly all the species being new to the museum.

Our extensive suites of American shells have been added to by the donations of Messrs. F. A. Sampson, O. A. Crandall, John Ford, J. A. Singley, G. H. Ragsdale, E. W. Roper, W. S. Strode, the Conservator, and many others as set forth in the list of accessions appended.

A special collection of the shells of the United States has been commenced under the auspices of the American Association of Conchologists. It is the intention of the officers, with the coöperation of the large membership of the association, to make this collection a complete exposition of the molluscan life of America. None but the finest specimens of each species or variety are accepted. John H. Campbell, Esq., of Philadelphia, the President of the Association, and the originator of the enterprise, has already received a large number of specimens, 153 trays of which have been placed in the cases, and form an excellent beginning of what promises to be a most valuable addition to the museum. These specimens are presented with no conditions save that they shall form a United States collection separate from the general collection and that they be received from members of the American Association of Conchologists only. The plan is heartily approved by the Curator-in-Charge of the Academy, as a step toward the formation of special collections illustrating characteristic faunæ of the globe.

The museum work has progressed rapidly, and is now as close to the literary part of the work as it can be kept. During the year the entire collection of *Helices* has been rearranged in harmony with the Manual of Conchology, up to the end of the last completed volume, filling five double table cases and sixty-two drawers, representing the groups of *Helicoid* shells included in volumes III, IV and V of the Manual. This work has been rendered possible by the addition to our space of two double table cases containing sixteen drawers.

In the current volumes of the Manual of Conchology, the Conservator has monographed the families *Stomatellidæ*, *Scissurellidæ*,

Scutellinidæ, *Haliotidæ* and *Fissurellidæ*, and the *Helices* of Madagascar, Japan and Australia. He has identified and relabeled the specimens of each group in the collection as they were studied. The first series of the Manual now approaches an end; the true Limpets and the Chitons only remaining unfinished. The second series has progressed as far as the completion of the true *Helices*. The Philippine Island group *Cochlostyla* will be considered in the volume for 1891, the illustrations for which are already well advanced. The Conservator has been assisted during a number of months of the year by Mr. F. C. Baker, a gentleman whose willingness and efficiency deserve high commendation.

At the annual meeting, held December 4th, the following officers were elected to serve during the ensuing year:—

<i>Director</i> ,	.	.	.	.	W. S. W. Ruschenberger.
<i>Vice-Director</i> ,	.	.	.	.	John Ford.
<i>Recorder</i> ,	.	.	.	.	Edward J. Nolan.
<i>Secretary</i> ,	.	.	.	.	J. H. Redfield.
<i>Treasurer</i> ,	.	.	.	.	S. R. Roberts.
<i>Librarian</i> ,	.	.	.	.	Edw. J. Nolan.
<i>Conservator</i> ,	.	.	.	.	Henry A. Pilsbry.

H. A. PILSBRY,

Conservator.

REPORT OF THE ENTOMOLOGICAL SECTION.

Since the last report the Section has prospered in many ways. There has been an increase in the interest taken in entomology by its members, and the meetings have been well attended. A number of interesting verbal communications on entomology have been made at the several meetings, and several valuable papers have been published by the Society and Section. Two members and two associates have been elected during the year. The various collections are in fairly good order. The arrangement of the exotic lepidoptera has been completed; it was made up of the collections of the American Entomological Society, the Academy, and that given by the heirs of Mr. T. R. Peale. Over one thousand specimens have been added to the North American collection, a very small proportion of these having been purchased.

There have been over seven hundred additions to the library. The journal entitled "Entomological News," which is published by

the Section, with the financial aid of the American Entomological Society, has been successful beyond our expectations. The first volume, now completed, consists of one hundred and sixty-eight pages of interesting matter contributed by many of the leading Entomologists of the country. It will be continued and increased to twenty or more pages per number, and be illustrated whenever possible. The proceedings of the Section for each month have been published in the "News."

At the public receptions given by the Academy, the Section has made displays of insects which have elicited favorable comment, and will no doubt help to popularize this branch of natural history. As the "Entomological News" identifies insects for subscribers, it becomes necessary to have the collections in good condition and species well represented, so that this may be properly done. All insects received for determination through the committee having charge of the publication of the "Entomological News" become the property of the Society. At the last meeting of the year the following officers were elected:—

<i>Director,</i>		George H. Horn, M.D.
<i>Vice-Director,</i>		Rev. H. C. McCook, D.D.
<i>Treasurer,</i>		E. T. Cresson.
<i>Recorder,</i>		Henry Skinner, M.D.
<i>Publication Committee,</i>		) Philip Laurent, } Henry Skinner, M.D.
<i>Corresponding Secretary,</i>		Angelo Heilprin.
<i>Conservator,</i>		Henry Skinner, M.D.
		HENRY SKINNER,
		<i>Recorder.</i>

REPORT OF THE BOTANICAL SECTION.

The Vice-Director of the Botanical Section has the honor to report the continued prosperity of the Section. It has no debts, and has a balance in its treasury. The stated meetings have been held regularly, and communications of interest to botanists received at each meeting, some of which have subsequently appeared in the Proceedings of the Academy.

The officers elected for the coming year are as follows:—

<i>Director,</i>		W. S. W. Ruschenberger, M.D.
<i>Vice-Director,</i>		Thomas Meehan.
<i>Treas. and Corres'g Sec'y,</i>		Isaac C. Martindale.

Recorder, ... Charles Schäffer, M.D.

Conservator, ... John H. Redfield.

The report of the Conservator, which is submitted as part of this report, shows a gratifying increase in the Herbarium—the number of determined species of flowering plants and ferns now exceeding 30,000.

THOMAS MEEHAN,
Vice-Director.

Conservator's Report for 1890.—The Conservator respectfully submits the following Annual Report upon the condition and progress of the Academy's Herbarium:—

During the past year large and valuable additions have been made to our collections, reminding us that the time has already arrived when we need larger apartments to provide suitable space for such accessions. The chief contributions have been of plants of the tropical regions of America, of which we are now enabled to display a creditable representation, constituting a nucleus for such future accretions as will in time render our Herbarium indispensable to the student of the floras of Mexico and South America.

Prof. Rovirosa has continued his researches in the rich flora of the province of Tabasco, and has added three hundred species to his former gifts, a large number of them of great interest, and till now unrepresented in the collection. Mr. C. G. Pringle, noted for his long experience in collecting, and for the judgment and care manifested in the selection and preparation of his specimens, spent the season of 1889 in the Mexican Province of Jalisco, and we have the result in a series of 335 species, a large proportion of which are new to us. Mr. T. S. Brandegee, of the California Academy of Natural Sciences, has sent us a collection made by him in 1889, in the peninsula of Lower California, a region hitherto so little known that more than half the species were new to us. The scientific expedition sent out by the Academy in the early part of the year, under the guidance of Prof. Heilprin, though mainly devoted to other branches, did not neglect the flora of the regions which it traversed; and by the aid of Messrs. Stone and Baker, it has contributed 325 species, mostly from Yucatan, and from the region about Orizaba and Mexico, a fair proportion of which are novelties. From South America we have received a collection made in Bolivia by Miguel Bang, admirably supplementing those previously made by Dr. H. H. Rusby, in the same region.

Besides these American plants, we may specify a valuable collection of 700 species recently made by Prof. J. Bornmüller, in the province of Amasia, in the northern portion of Asia Minor. For this contribution, of which more than half the species are new to our shelves, we are indebted to the kindness of Mr. W. G. Warden, of Germantown.

Other lesser contributions will appear in the usual detailed list of plants recorded in the additions to the museum.

The total number of species received during the year has been 3,289, of which 2,811 were Phanerogams and vascular Cryptogams. Of these latter 1,161 are believed to be new to our collection, and among them are representatives of 49 new genera; 241 are from our own territory; 1,759 are from tropical America; 777 are from the northern portions of the eastern hemisphere, and 34 are from its more southern portions. The remaining 478 species received are of the lower Cryptogams, and include some valuable collections of mosses. The additions of the past year raise the estimated number of species of Phanerogams and vascular Cryptogams in the Academy's Herbarium to 30,053.

The Vice-Director of the Section has contributed a large share of his valuable time to the study and determination of the plants received from Prof. Rovirosa, and from the Heilprin expedition. In this work he has been aided to some extent by Mr. Burk and by the Conservator, who have therefore not been able to accomplish as much as heretofore in the work of mounting the collection, yet all the North American accessions have received this attention, and all others have been placed in covers and carefully distributed.

JOHN H. REDFIELD,
Conservator.

REPORT OF THE MINERALOGICAL AND GEOLOGICAL SECTION.

Fewer meetings than usual have been held this year, most of them under the new arrangement with the meetings of the Academy, on the first Tuesday of each alternate month. Long-continued absence of the more active members, has also operated this year, as it did last, to the detriment of the meetings, but they have not been without interest.

A number of specimens have been purchased by the Section, and added to the collection of the Academy.

Respectfully submitted,

THEO. D. RAND,

Director.

REPORT OF THE PROFESSOR OF INVERTEBRATE PALEONTOLOGY.

The Professor of Invertebrate Paleontology respectfully reports that owing to protracted absence in Mexico and Yucatan, acting as director of the scientific expedition organized under the auspices of the Academy, he was unable to participate in the regular spring course of instruction. He hopes, however, to make good the deficiency by extending the course of lectures contemplated for the coming season.

The collections of the Academy in the department of Paleontology continue to receive steady accessions of material, so that it is able to maintain itself as one of the leading departments of the institution. Among the more important accessions of the year is a large collection of Eocene fossils from the State of Texas, kindly presented by the State Geologist, Mr. E. T. Dumble. The collections obtained in Mexico and Yucatan by the Academy's expedition, which still largely await critical examination, are a contribution alike new to science and to the Academy's museum.

Respectfully submitted,

ANGELO HEILPRIN.

REPORT OF THE PROFESSOR OF ETHNOLOGY AND ARCHÆOLOGY.

In the early months of 1890 I delivered a series of ten lectures on the "General Science of Ethnography," including its main principles and their application to the study of man throughout the world.

These lectures were well attended, from 150 to 175 being the average number of persons present. They appeared to excite an interest in the subject, and at the request of several of the auditors the lectures have since been written out and published under the title, "Races and Peoples; Lectures on the Science of Ethnography." It is believed that the attention thus directed to this important

science will have good results both generally and for this institution. A similar series, limiting the field to modern Europe, is in preparation for the present winter.

The collections in the departments of Archæology and Ethnology are substantially in the same condition as at the date of my last annual report. Want of exhibition space has prevented any material increase in the number of specimens, and even the present collections are barely accessible to students. The construction of a new building for the use of the Academy gives hope that before long a more satisfactory display of these collections will be possible.

Respectfully submitted,

D. G. BRINTON.

REPORT OF THE PROFESSOR OF INVERTEBRATE ZOOLOGY.

The Professor of Invertebrate Zoology respectfully reports that ninety trays of marine, fresh-water and land shells, collected by him during the winter of 1888-89, on the Caribbeian Islands, have been presented.

During the past year he delivered seven lectures on the "Caribbean Islands," five of which were illustrated with lantern slides.

It is proposed to give a course of lectures on the "Principles of Zoological Philosophy" during the spring of the coming year.

The additions to the museum have been important. A small part of the collection made by the expedition of the Academy of Natural Sciences, under the charge of Professor Angelo Heilprin, including Echinodermata and corals, have been presented. The bulk of the collection is now being worked up, and will be formally presented in the coming year.

A collection of Echinoidea, Asteroidea, Ophiuroidea, Holothuroidea, Crinoidea, Anthozoa, Hydroidea, Crustacea and Annelida, principally from the dredgings of the U. S. Fish Commission steamers, have been presented by the Smithsonian Institution.

Respectfully submitted,

BENJAMIN SHARP,

Prof. of Invert. Zool.

REPORT OF THE CURATOR OF THE WILLIAM S.
VAUX COLLECTIONS.

The Curator of the W. S. Vaux collections submits his report for the years 1889 and 1890.

The collections are in good condition. One hundred and forty specimens were added during the two years embraced by the report, at a cost of \$379.28. Sixteen upright cases have been prepared at an outlay of \$523.22, and placed above the horizontal cases for the proper systematic arrangement of the additions.

The additions now reported increase the number of specimens in the Mineralogical collection to 7,028. No additions have been made to the Archeological collection, and the specimens at present number 2,940, the same as reported in 1888.

Respectfully submitted,

JACOB BINDER,

Curator.

The election of Officers, Councillors and Members of the Finance Committee, to serve during the year 1891, was held with the following result:—

<i>President,</i>		Joseph Leidy, M.D.
<i>Vice-Presidents,</i>		Thomas Meehan, Rev. Henry C. McCook, D.D.
<i>Recording Secretary,</i>		Edward J. Nolan, M.D.
<i>Corresponding Secretary,</i>		Benjamin Sharp, M.D.
<i>Treasurer,</i>		Isaac C. Martindale.
<i>Librarian,</i>		Edward J. Nolan, M.D.
<i>Curators,</i>		Joseph Leidy, M.D., Jacob Binder, W. S. W. Ruschenberger, M.D., Angelo Heilprin.
<i>Councillor to serve for an un- expired term,</i>		Gavin W. Hart.
<i>Councillors to serve three years,</i>		Charles P. Perot, J. H. Redfield, Charles Morris, Harold Wingate.
<i>Finance Committee,</i>		Charles P. Perot, Charles Morris, Charles E. Smith, Gavin W. Hart, Uselma C. Smith.

ELECTIONS DURING 1890.

MEMBERS.

January 28.—Carl Edenheim.

February 25.—William H. Bricker, M.D., Samuel G. Dixon, M.D., David J. Bullock, Stephen Farrelly, Baird Halberstadt, Mahlon Walker, M.D.

March 25.—Thomas H. Dudley.

April 29.—William K. Shryock, Abraham Barker, Walter Conrad.

May 27.—Caleb J. Milne, David Milne, John C. Garland, Annesley R. Govett, Alfred G. Baker, Charles Platt, John Cadwalader,

Clement A. Griscom, Charles P. Hayes, James MacAllister, Thomas Miles.

June 24.—J. Dundas Lippincott.

October 28.—Charles S. Welles, Thomas B. Harned, Ida A. Keller, Ph.D.

November 25.—Albert P. Brubaker, M.D., Virginia Maitland.

CORRESPONDENTS.

January 28.—Henry M. Stanley.

July 29.—George Frederick Kunz, of New York.

October 28.—Ernst Haeckel, of Jena; Edw. L. Greene, of Berkeley, Cal.

November 25.—Alfred Giard, of Paris; C. Hart Merriam, M.D., of Washington; R. W. Shufeldt, M.D., of Washington; Florentino Ameghino, of Buenos Ayres.

ADDITIONS TO THE MUSEUM.

1890.

MAMMALIA.

Zoological Society of Philadelphia. Mounted specimens of *Synotheres prehensilis* and *Crossarchus obscurus*; prepared skeletons of *Auchenia guanaco*, *Oreas canna*, *Cervus Canadensis*, *Equus zebra*, *Macacus arctoides* and *Cervus Sika*; skin of *Macacus arctoides*.

BIRDS.

F. C. Baker. A collection of sixty-nine birds from Rhode Island and Florida.

E. Fronani. *Chrysotis ochrocephala* and *Icterus icterus*.

Chas. Liebeck. Nest and eggs of chewink (*Pipilo erythrophthalmus*), from Willow Grove, Pa.

Zoological Society of Philadelphia. Skin of *Aramus giganteus*.

Academy Expedition to Mexico (1890.) Two hundred and thirty-three specimens (108 species, about one-fifth new to the Academy's collection) of birds from Yucatan and Mexico.

REPTILES AND AMPHIBIANS.

Mrs. J. B. Ellis. Snake-skin from Sierra Leone, Africa.

F. M. Beamer. Two skins (slough) of *Eutania sirtalis*.

John Ford. *Ophibolus doliautus*, var. *triangulus*, from Belmont, Philadelphia.

Louis Vossion. Skin of the Cobra di Capello, from Madras.

Chas. Liebeck. *Salamandra fasciatus*, from Hammonton, N. J.; *Sceloporus undulatus*, from Atlantic City, N. J.; *Bufo Americanus*, *Spelerpes ruber*, and *Sceloporus undulatus*, from Camden, N. J.

Wm. J. Fox. *Amblystoma opacum*, from Atlantic City, N. J.

Arthur Erwin Brown. *Stilosoma extenuata*, from Lake Kerr, Florida (type); *Eutania nigrolateris*, from Tucson, Arizona (type.)

F. C. Baker. *Cyclophis æstivus*, *Elaps fulvius*, *Tropidonotus*, *sp?* from Oak Lodge, Fla.; *Eutania sirtalis*, from Philadelphia.

F. W. Walmsley. *Heterodon simus*, from Bridgeton, N. J.; *Eutania sirtalis*.

FISHES.

Benjamin Sharp. Collection of fishes from the Caribbees; *Cyclopterus lumpus*; *Gobiesox*, *sp?* from Villafranca.

P. Laurent. *Lutjanus Stearnsii*, from Anglesea, N. J.

RECENT INVERTEBRATA (excluding Mollusca and Insecta.)

Miss L. Kromer. A collection of Bryozoa, and *Lepidonotus squamatus*, from Nantucket, Mass.

Angelo Heilprin. Two trays of *Suberites compacta*, *Balanus*, *sp?* sponges, and worms from Nantucket, Mass.

Wesley P. Wright. Four trays of mounted specimens of *Aglaophenia struthionides*, from the Californian coast.

Eugene M. Aaron. *Julus* sp?, from a bunch of bananas.

Witmer Stone. Parasitic worms from the intestine of Cooper's Hawk.

S. G. Dixon. Boring of Carpenter Ant in cherry-wood.

Benjamin Sharp. Collection of Invertebrates from the Caribbees; *Arenicola ecaudata* and *Spirographis Spallanzanii*, from Villafranca, near Nice; *Ascidia intestinalis*, *Hermione* sp?, *Thysanozoon Brocchii*, from Naples; *Arenicola piscatorum*, *Psammolyce arenosa*, *Sternaspis* sp?, *Phascolosoma*, sp? and *Scorpio Europæus*, from Villafranca.

Collection of Invertebrates from the Mediterranean.

Uselma C. Smith. *Arenicola cristata*, from Anglesea, N. J.

Smithsonian Institution. A collection of *Echinoidea*, *Asteroidea*, *Ophiuroidea*, *Holothuroidea*, *Crinoidea*, *Anthozoa*, *Hydroidea*, *Crustacea* and *Annelida*, principally from the dredgings of the U. S. Fish Commission.

Jas. T. B. Ives. *Flustra foliacea*, from Hartlepool, Eng.

Wm. J. Fox. Turret Spider (*Lycosa arenicola*) from Atlantic City, N. J.; nest of *Polistes pallipes*.

Miss Edith Ives. *Medusa* and *Ocypoda arenaria*, from Atlantic City, N. J. A collection of Invertebrates from Five Mile Beach, N. J.

John Ford. *Lepas fascicularis*, from Atlantic City, N. J.; Serpuloid tubes on *Natica duplicata*, from Anglesea, N. J.; *Echinoneus semilunaris*, from Cuba.

J. E. Ives. Nine species of Invertebrates from Holly Beach, N. J. A collection of Invertebrates from Five Mile Beach, N. J.

Academy of Natural Sciences Expedition to Mexico, 1890. Thirteen species of Echinoderms, and a collection of Corals and Bryozoans from the northern coast of Yucatan and the harbor of Vera Cruz.

F. C. Baker. Scorpions from Oak Lodge, Fla.

H. C. McCook. *Lumbricus terrestris*, from Hollidaysburg, Pa.

D. J. Bullock. *Cucumaria frondosa*, from Bar Harbor, Me.

Isaac Norris. *Strongylocentrotus Drobachiensis*.

W. S. W. Ruschenberger. *Pollicipes mitella*, from Cochín-China.

Joseph Leidy. *Velella mutica*, from Beach Haven, N. J.

MOLLUSCA (recent.)

Academy Expedition to Mexico (1890). Three hundred and twenty-five trays of marine shells from Yucatan and Mexico; 406 trays of land and fresh-water shells, collected by Prof. Heilprin and others; eight trays and bottles of mollusca, collected at Havana, Cuba.

Dr Harrison Allen. *Helix hortensis* L., Nantucket.

American Association of Conchologists (through Mr. Campbell, President), 153 trays of marine, land, and fresh-water shells of the United States and Alaska (detailed list of which will be found in *The Nautilus* for November and December, 1890.

F. C. Baker. *Murex haustellum* var. *longicauda* Baker; *Lyogyrys Brownii* Cpr. R. I., *Planaxis lineatus* Bahamas; *Ricinula Pilsbryana* Baker (type), Ceylon.

- Strophia lineata* Mayn.; *Peristernia nassulata* Lam.; ten species of Polynesian marine shells.
- John Brazier. Five species of Australian mollusks in alcohol.
- John H. Campbell. *Helix trizonaloides* A. D. Brown, type. *Ricinuia iodostoma* Ducl. N. Zealand.
- Dr. H. Chapman. *Neptunea decemcostata*, *Terebratulina septentrionalis*, etc., from Mt. Desert, Maine, contained in ten trays and bottles.
- Conchological Section (obtained by purchase.) Twenty-five trays of Philippine Island land shells; *Helix Gaberti* from New Ireland; 18 species of Lake Tanganyika shells; 54 trays of marine shells, new to the museum; 203 trays of land and fresh-water shells from the western U. S., and (by exchange) 100 species of Palearctic land and fresh-water shells, from Robert Jetschin.
- O. A. Crandall. Twelve species of fresh-water shells from Missouri and Arkansas, including types of *Goniobasis Crandalli* Pilsbry.
- W. H. Dall. *Halistylus columna* Dall.
- Geo W. Dean. *Helix Tiesenhauseni* Gredl. Tyrol.
- F. J. Ford. Five species of land shells from Kansas.
- John Ford. Types of *Helicina Dentoni* Pilsbry, and *Helix Deaniana* Ford, from New Guinea; *Gibbula obliquata*, *Helix candidissima* large var., *H. tigri* var. *dicallistodon* Bgt., *Helix tigri* Gervais, *Solen*, from N. J.; *Australium*, *Monodonta* (4 spp.) and *Trochus*; *Haliotis gigantea* Chemn. and four species of New Jersey shells.
- Wm. J. Fox. Twenty-eight species of New Jersey land and fresh-water shells. *Peristernia Wagneri* Anton. One species of *Cerithium*; *Helix introferens* Bld. from Atco, N. J.; *Bulinus* sp.; *Turbinella muricatum* var.; 4 species of marine shells.
- I. Greigor. *Triton femorale*, L., Bahamas.
- Dr. W. H. Hartman. Two species of *Strephobasis*; eight species of *Helicina*.
- Prof. F. L. Harvey. Four species of Pacific Ocean shells (new to collection), type of *Engina Harveyana*, Baker.
- J. E. Ives. *Nassa obsoleta*, and eight other mollusks, Sea Isle City, N. J.
- C. W. Johnson. *Neritina Virginea*, L., Fla.; *Cerithium atratum*, Marco, Fla.; six species of *Monodonta* and *Euchelus*.
- G. W. Lichtenthaler. *Ostræa edulis* var. *Adriatica*, *Dosinia lupinus*, from Venice; *Anodonta cygnæa* var., England.
- G. D. Lind. Three species of fresh-water shells from St. Louis, Mo.
- Geo. T. Marston. *Bythinella obtusa* Lea, Green Bay, Wis.
- Wm. J. McGinty. *Astyris lunata* Say, Atlantic City, N. J.
- D. R. Pilsbry. *Vivipara* sp., Orange Co., Fla.
- H. A. Pilsbry. *Venus merceneria* var. *antiqua*, Nantucket; *Limax agrestis*; *Helix Rameri*; 4 sp. *Zonites* and 4 sp. *Helix*, Natural Bridge, Va.; *Helix Hyeli* Mitt., Balearic Is; *Bythinella latheineri*, Italy; *Holospira Elizabethæ*, section and abnormal shell with double aperture.—*Helicina occulta* Say, Natural Bridge, Va. *Goniobasis Ozarkensis* Call, Mo.; *G. nigrina* Lea, Oregon. Sixteen species fresh-water shells from New Orleans; *Limnæa bulimoides* Lea, Dakota; *Gundlachia Meekiana*, Rock Island, Ill.; *Succinea Salleana*, New Orleans, La. (alcoholic); *Limax campestris*, New Orleans, La.; *Helix hamas-*

- toma* var. *concolor*, type of var., Ceylon; *Limnæa bulimoides* Lea, Ogalalla, Neb.
- Henry Prime. Forty species of Haytian mollusks, preserved in glycerine.
- G. H. Ragsdale. *Bulimulus Ragsdalei*, from Texas (types of sp.) *Helicina orbiculata*, Texas. *Unio tuberculatus*, Texas. *Helix thyroides* var., Texas.
- S. R. Roberts. Three species of *Unio*, from Florida.
- E. W. Roper. Ten species of land and fresh-water mollusks.
- F. A. Sampson. Six species of *Strepomatidæ*; *Helix Kiowaensis* var. *Arkansensis* Pils., types of var., 4 sp. land shells, Sedalia, Mo.
- J. Shallcross. *Voluta Férussaci* Don., Patagonia.
- Dr. Benjamin Sharp. Ninety-four trays of Caribbæan shells, and thirty bottles of alcoholic specimens, from Naples and Villafranca.
- J. A. Singley. Twenty species of fresh-water and land shells from Texas.
- U. C. Smith. Three species of marine shells, Anglesea and Atlantic City, N. J. *Littorina irrorata*, Atlantic City, N. J.; *Scalaria turricula* Sowb., Anglesea, N. J.
- Frederick Stearns. *Helix*, six species, Japan and China.
- R. E. C. Stearns. Four species of *Bulimus*, Buenos Ayres.
- W. S. Strode. Suite of twelve *Anodonta suborbiculata*; *A. grandis*, from Illinois.
- M. B. Taylor. Collection of seventy-five trays of East Indian shells, collected by the late Marmaduke Burrows.
- A. W. Vogdes. *Dentalium* sp., Florida.
- Jos. Willcox. Six species of mollusks from Florida.
- B. H. Wright. *Bulimulus* from Florida. *Goniobasis Etawahensis* Lea, Florida.
- S. Hart Wright. *Planorbis scalaris* Jay, in alcohol.

FOSSIL VERTEBRATA.

- Joseph Willcox. Hyposternal bone of *Emys*, from the Pliocene of Florida.
- Joseph Leidy (in exchange.) *Emys Wyomingensis*, from the Bridger Eocene of Wyoming.
- A. E. Foote. Fragment of molar of elephant, from Jalisco, Mexico.
- J. K. Corson. Vertebræ of Saurian, from the Ft. Bridger Eocene.
- Joseph Jeanes. A collection of mammalian remains from the Oligocene and Miocene deposits of France.

FOSSIL INVERTEBRATA.

- R. T. Hill. A collection of fossils (and rocks) from the Cretaceous of Texas and Arkansas.
- George Dare. Eleven trays of fossils from New Jersey.
- L. Woolman. Ten trays of Post-Pliocene fossils from New Jersey.
- John H. Campbell. Two species of Post-Pliocene fossils from California.
- J. K. Corson. A collection of Cretaceous fossils from Wyoming.
- Morris B. Miller. *Inoceramus Cripsii* (?) from near Fort Wingate, New Mexico.
- Joseph Willcox. *Balanus*, sp? from the Caloosahatchie deposits, Florida (Pliocene,) and six species of Mollusca.

- J. E. Ives. *Lituites* *sp?* from Henderson's Station, Pa.; a collection of Cretaceous fossils from the region of Mullica Hill, N. J.
- Joseph Leidy, *Scolithus linearis*, from the grounds of the University, Philadelphia.
- H. A. Pilsbry. *Dreissena* *sp?* from the Congeria beds of the Caspian basin.
- T. D. Rand. Coralliferous pebble (Lower Silurian?), from Southern New Jersey. State Geological Survey of Texas. A collection of Eocene fossils (comprising the greater number of the known species) from the Gulf border of the State.

MINERALS, ROCKS, ETC.

- Miss Frances Lea. Phlogopite, St. Lawrence Co., N. Y., from the collection of the late Dr. Isaac Lea.
- W. W. Jefferis. Leelite, Leni, Delaware Co., Pa.; Capillary Pyrite and Sphalerite, from Mineral Point, Wis.; Orthoclase, from Johnson's Quarry, Delaware Co., Pa.; Chondrodite, from Putnam Co., N. Y.; Apophyllite and Calcite, from French Creek Mines, Pa.; Amethyst from Oglethorpe Co., Georgia; Asbestos from Pelham, Mass.; Serpentine from Texas, Lancaster Co., Pa.; Menaccanite from Dublin, Harford Co., Md.; Phlogopite and Serpentine, Edwards, St. Lawrence Co., N. Y.; Phlogopite from Muscalonge Lake, St. Lawrence Co., N. Y.; Trap rock from West Chester, Pa.
- Angelo Heilprin. Clays from Martha's Vineyard, Mass.
- Benjamin Sharp. Nine trays of minerals from Antigua.
- Mrs. C. J. Bloomfield Moore. Agate chimney filled with crystallized quartz, from 35 m. northwest of Green River Station, on the Union Pacific Railroad.
- W. H. Witte. Siderite and Jasper from Ivy's Mine, Northampton Co., Pa.
- M. Hartman. Five specimens of iron-ore, from Texada Island, British Columbia.
- A. W. Moore. Specimens of Guano from Navassa, West Indies.
- E. Fronani. Nodular Quartz, from Philadelphia.
- Joseph Leidy. A collection of rocks from Kennebunkport, Me.; decomposed granite, from the grounds of the University, West Philadelphia.
- J. E. Ives. Limestone containing a vein of quartz from Henderson's Station, Pa.
- Mrs. W. P. Saunders. Quartz crystals, from Crystal Hill, near Delaware Water Gap, Pa.

PLANTS.

- Prof. José N. Roviroa. Three hundred species of plants from the State of Tabasco, Mexico.
- Thomas Meehan. Sixty-one species of plants from various regions, mostly cultivated.
- Prof. J. C. Arthur. Specimens of *Tilletia fatens* B. and C. (stinking smut or bunt), from fields of Fultz wheat, Haw Patch, Ind.
- Townsend S. Brandegee. One hundred and twenty-one species of plants collected by him in the peninsula of Lower California, Mexico, January, May, 1889.
- John Archagouni. Tubers of *Arum orientale* L., from Constantinople.
- Dr. Edward J. Dirickson (through Mr. H. N. Potts.) *Phoradendron flavescens* Nutt. (American mistletoe) in fruit.

John H. Redfield. Six hundred and seventy-nine species of plants collected by Miguel Bang in Bolivia, S. A., in 1889; 127 species of mosses from Ceylon, collected and named by Thwaites; 13 species of mosses from Sandwich Islands; 335 species of plants collected by C. G. Pringle, mostly in the Republic of Mexico, in 1889; Underwood and Cook's N. American Hepaticæ, Decades V-VIII; 40 species.

Wm. M. Canby. *Aquilegia Jonesii* Parry, collected by F. Tweedy, in Montana; 59 species of European plants, mostly collected in Spain, by E. Reverchon, in 1889.

Ellis and Everhart. Centuries 24 and 25 of North American Fungi, received in exchange for duplicate Centuries heretofore received from estate of Dr. George A. Martin.

Dr. J. H. Sandberg, Minneapolis, Minn. Four species of plants from Idaho. Agricultural Department, Washington, D. C. Forty-four species of mosses, collected in California by H. N. Bolander, and determined by Mrs. E. G. Britton.

Isaac Burk. Five species of tropical American plants, cultivated at Horticultural Hall, Phila.; 14 species of plants, mostly from ballast grounds.

Prof. F. L. Scribner. Fifteen species of plants from Roane Mt., N. C.

Dr. J. Bernard Brinton. Thirteen species of plants, mostly from Tennessee.

Academy Expedition to Mexico, 1890. Three hundred and twenty-five species of plants collected in Yucatan, in the vicinity of Orizaba and Mexico, and on the Pacific slope, by Stone, Baker and Heilprin, February-May, 1890.

Mrs. E. G. Britton and Dr. J. B. Leiberg. Thirty-nine species of mosses, collected by Dr. Leiberg, in Idaho.

W. G. Warden, through Thomas Meehan. Seven hundred species collected by J. Bornmüller in the province of Amasia, Asia Minor.

Miss Mary A. Schively. Specimens of *Hormactis Quoyii*, a marine alga, mounted and in spirits.

Lewis Woolman. Section of red cedar (*Juniperus Virginiana* L.) from Long Beach, near Barnegat, N. J., prostrated by the blizzard of March 11th, 1888.

Eugene A. Rau, Bethlehem, Pa. *Tribulus terrestris* L. and *Centaurea solstitialis* L., natives of southern Europe, growing upon iron ore heaps at Bethlehem, Pa.

Dr. Samuel Lewis. Peloric form of *Digitalis purpurea* L.

John K. Small, Lancaster, Pa. Specimens of *Asplenium pinnatifidum* Nutt. from various localities in Lancaster Co., Pa.

Prof. Thos. C. Porter. Twenty-three species of plants from Pennsylvania and New Jersey.

Edward L. Rand and John H. Redfield. One hundred and sixty species of plants from Mt. Desert I., Me., being portion of a series intended as vouchers for a proposed Catalogue of the Flora of that island.

Mrs. Flora E. Haines, Bangor, Me. *Aspidium Filix-mas* from Cape Breton.

ADDITIONS TO LIBRARY.

In consequence of the amount of scientific matter included in the Proceedings for 1890, the list of Additions to the Library has been omitted. The receipt of exchanges and donations will be acknowledged by mail.





System of Love by Love



